PAN-AMERICAN fisherman

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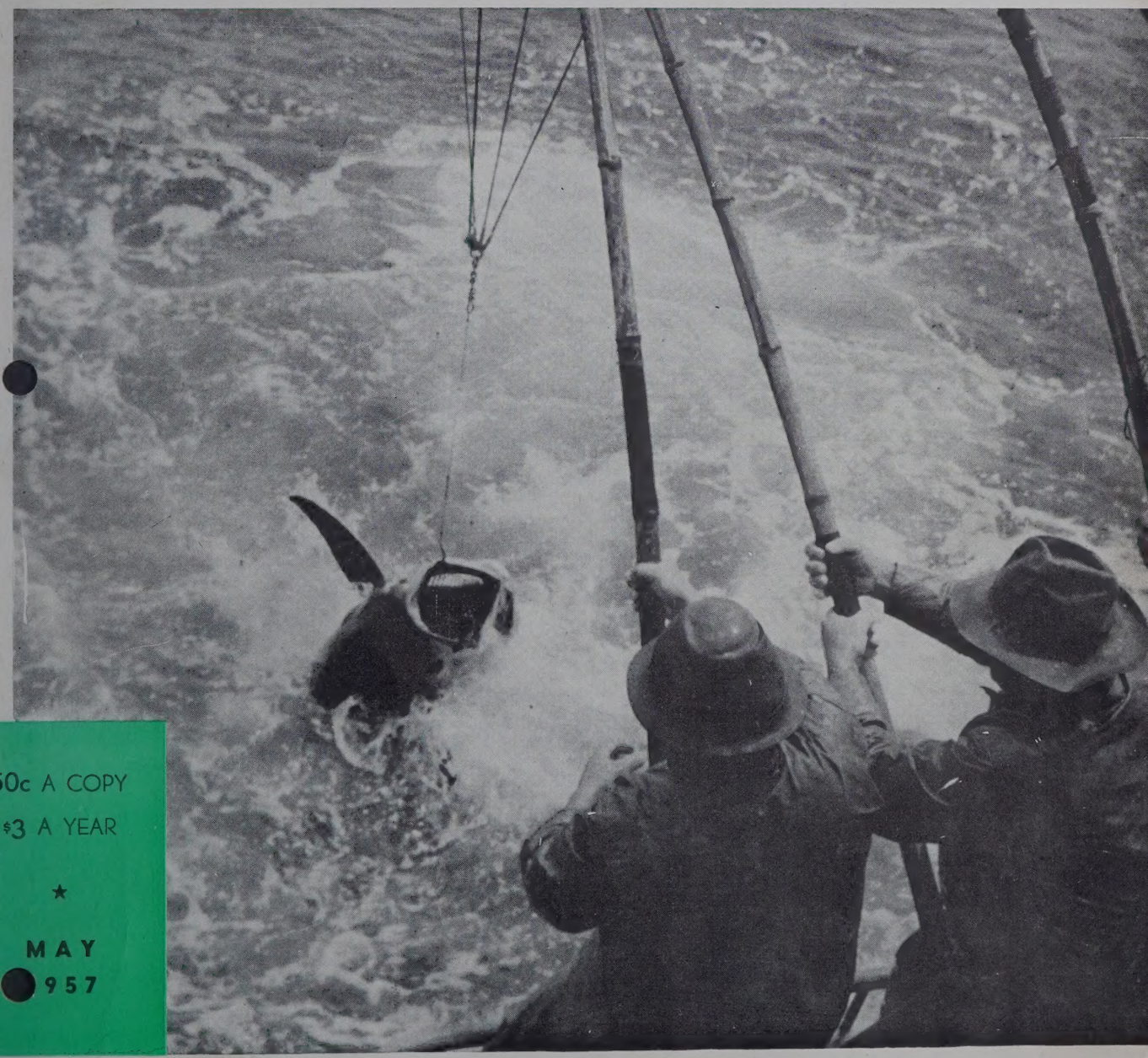
In This Issue . . .

- ★ Fisheries Provide Great Employment
- ★ Albacore Habits
- ★ Trends in Fish Food Harvest



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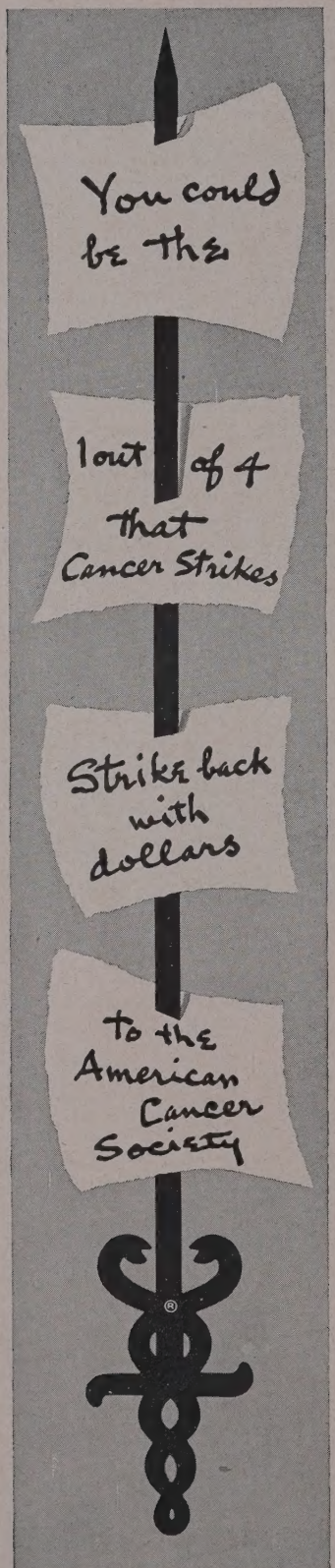

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Along California's Coast . . .

Commercial Crab Fishery

By W. A. DAHLSTROM and H. G. ORCUTT

Marine Biologists

COMMERCIAL crab fishery along California's north coast is important especially to Eureka and Crescent City crabbers.

Nearly 10,000,000 pounds of the rich, white-meated market crabs were caught in California annually during the last 10 years, bringing an income of $1,500,000 per season to the fishermen alone and providing employment for many others in allied industries.

The prime target for all this attention is the market crab, also known as the Dungeness, commercial or white crab. Only the mature males are legally caught and along the Central California coast it usually takes three to four years to attain the seven-inch breadth necessary to make them eligible for the gourmet's table. In a few close-to-shore areas in northern waters the crab may be taken, non-commercially only, when he reaches a width of six and one-half inches.

California crab laws and regulations apply only to this species and not to the various "rock crabs" taken in limited quantity by commercial and sport fishermen.

The introduction of more efficient crab traps (the principal means of catching the crab) and the addition of more and better equipped fishing vessels in recent years, together with an abundant resource, are the main reasons for the continued good fishing under increasing commercial activity. But a resource that is harvested so intensively needs sound protective regulations. For 60 years the female crab has been completely protected and since 1911 it has been unlawful to take males less than seven inches in width.

In 1955 the Legislature shortened the season by two months to protect crabs during the molting season, early in the summer. The larval crab, only as big as a grain of sand, hatch from December through March and are swept away by the ocean currents. Later they settle to the bottom and spend the rest of their lives there. During their first year they grow fast, shedding their shells from eight to

10 times and reaching a width of three to four inches. Because the shell encases the crab tightly, it cannot grow until it sheds or molts; a crab gains from 10 to 40% in size during a single molt.

This year the Legislature's new regulation goes into effect making it mandatory for each crab trap to have a circular escape opening at least four inches in diameter so that most females and small males can escape. This will enable them to avoid being caught and injured by handling several times each season. Such a conservation measure will help to assure a constant replenishment of the fishery, for it is only because of compliance with regulations based on sound principles of conservation that our crab resource has survived.

To learn more about crab movements, shellfish biologists have tagged several hundred of them. Most of those recovered to date have moved only a few miles from the point of release, but there were a few restless ones, too. One traveled 28 miles in a month from the mouth of the Russian River in 90 feet of water to a spot off Point Reyes in water 204 feet deep.

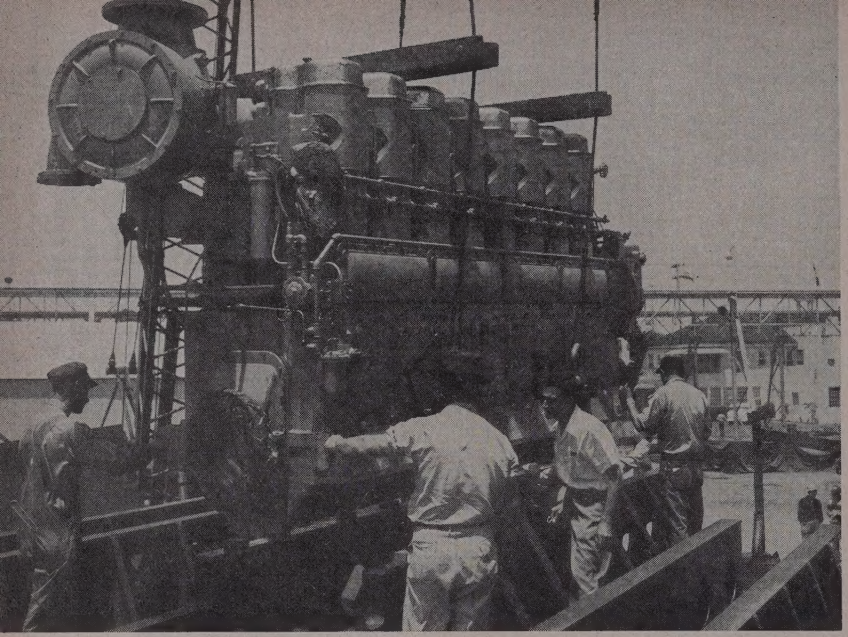
Another crawled 35 miles from Point Reyes to just south of San Francisco in 10 weeks. Enroute both were successful in eluding their principal enemy, the octopus, which finds crabmeat one of its favorite meals. Against most other marine life the crab's powerful claws and hard shell are ample protection.

Commercial crabbing in California is carried on from Point Conception northward but principally off Eureka, Crescent City and San Francisco. Other centers are in the Fort Bragg, Bodega Bay, Monterey and Avila-Morro Bay areas. During the season the traps, set from 25 to 300 feet deep and marked by a line of buoys, may extend for miles off these fishing sites. The traps are circular, three feet in diameter and 18 inches high, made of reinforcing steel rods covered with stainless steel wire mesh. There are two entrance tunnels opposite each other and a hinged lid over half the top. A jar containing bait, such as squid, clams or fish cleaning waste, is hung between the entrance tunnels.

Traps are fished at intervals of one to 10 days, depending on the season and the weather. Occasionally they catch fish, too, and even such birds as cormorants as deep as 200 feet. The birds apparently are attracted by the bait or the trapped crabs and swim down to investigate, only to become trapped themselves. After a storm it is not uncommon to find bottles, cans, bones, shoes and a variety of other items in the crab traps.

To keep abreast of developments in the industry and effects on the crab resource, Marine Fisheries biologists are conducting extensive research into habits, numbers and growth of the market crab. Samples of catches are taken aboard ship, measurements are taken and laboratory tests made. Tests are in progress also of devices to permit the escape of legal size crabs when storms carry away the traps, so as to prevent waste.

Through such methods the scientists hope to be able to predict well in advance the cycles of good and poor fishing success and to amass enough accurate evidence to make sound recommendations for protective regulations whenever needed. *



From Diesel Engines . . .

of 10.1 pounds (edible weight) of fish per person during the year; of this 5.7 pounds were fresh and frozen fish, 3.8 pounds were the canned product and .6 of a pound was cured. In 1955 the consumption was 10.2 per capita.

Fishery Leaflet 393 also points out that it would take $11,781,350,000 invested at 4% interest to maintain earnings comparable with the net earnings of the fishing industry in 1956.

The leading fish in pounds produced in 1956 with 1955 figures in parentheses were: menhaden (industrial fish) — 2,067,286,000 (1,867,783,000); salmon — 311,000,000 (289,880,000); tuna — 327,179,000 (269,499,000); sea herring — 243,472,000 (163,632,000); shrimp — 220,000,000 (244,335,000); haddock — 151,822,000 (135,035,000), and

Fisheries Provide Great Employment

According to FAWS Fishery Leaflet 393 just released by the Department of the Interior: In 1956 approximately 150,000 commercial fishermen, working with approximately 90,000 boats of various sizes, produced 5,200,000,000 pounds of fish which was valued (before expenses were deducted) at—

$ 363,000,000 at the boatside ($335,800,000 in 1955);

$ 612,000,000 at the processor level ($556,000,000);

$ 865,000,000 to the wholesaler ($800,000,000) and,

$1,128,000,000 to the retailer ($1,043,000,000).

In addition the commercial fishing industry was responsible for—

The employment of an estimated 300,000 workers in allied industry such as gear manufacture, making processing machinery and boat construction;

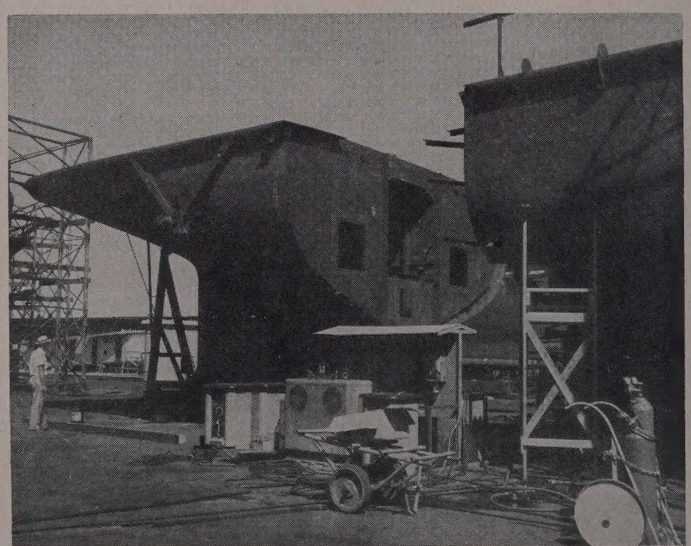
The employment of 101,000 shore workers in 4,024 shore establishments including processing plants and some wholesale units but not retailers;

The employment of 3,300 workers using 1,350 boats to transport fish from area of capture to handling and processing plants.

The consuming public's response to this activity was to eat an average

Atlantic Ocean perch — 151,058,000 (156,989,000).

San Pedro, California, retained its leadership as a landing port with 382,924,000 pounds of principally tuna, Pacific sardines and mackerel



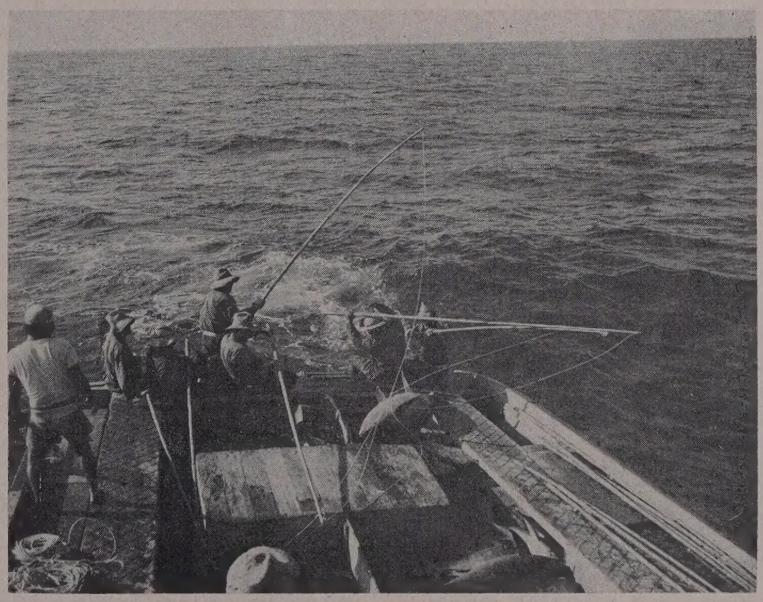
. . . to the Shipyards

Nets, Floats, Supplies

landed. Lewes, Delaware, was second with 354,095,000 pounds, all of which was menhaden. Gloucester, Mass., was third with 250,068,000 pounds of ocean perch, whiting and menhaden. Then came Beaufort-Morehead City, N. C., with 202,335,000 pounds of shrimp, spot and menhaden. San Pedro landings led the field in value with $29,000,000. San Diego was next with $18,778,000 and New Bedford, Mass., third with $12,337,000. The value of the catch landed at Lewes, Beaufort-Morehead City, Reedville, Va., and Cameron and Empire, La., was not available.

The canned pack for 1956 was 12% above that of 1955, due primarily to increases in tuna, Alaska salmon, Maine sardines and Pacific Coast mackerel. The tuna pack of 230,000,000 pounds set a new record, beating the mark set in 1955 by 33,000,000 pounds. There was an increase in the amount of crabmeat canned but a decline in the canning of oysters.

There were 533 establishments engaged in canning fish and byproducts. The Pacific Coast led with 147 plants; Alaska was second with 104; the South Atlantic and Gulf were third with 100; New England next with 74; then the Middle Atlantic States with 50, the Chesapeake Bay area with 33, and the Lake States with 22. Puerto Rico, Hawaii and American Samoa each had one.



Thousands of Fishermen, Tons of Fish

It ends up here—the cannery at work

THE SEA OTTER

By RAYMOND M. GILMORE

A SIGHT never to be forgotten is that of a sea otter furrowing through the quiet waters of a thick kelp bed along the rocky coast of central California, its head barely distinguishable among the brown float bulbs of kelp. Here is one of the fabulous animals of the world!

Its exceedingly valuable pelt once sent hundreds of men into danger and even crime, carried the Russians and their Aleut hunters far down our northwestern coast and was one of the irresistable incentives for Americans to open up the waters and lands of this far flung empire—thereby almost causing the animal's extinction.

All this happened to the sea otter in the late 18th and entire 19th centuries—when the greed of men demanded more and more of the lustrous skins to decorate their women and their royalty. The pelt is the most beautiful and finest of all the world's animals—a fact recognized early by the Manchu mandarins of China and the Romanoffs of Imperial Russia, both of whom used the fur as a badge of royalty and unequalled opulence. The underfur of the sea otter is unbelievably dense; and in addition, is durable, silky fine, with an oily sheen which is resplendent. Little wonder that at one time a pelt could sell for as much as $1,000 and the record prices were said to have been as high as $2,500 on the Londan market. The color is deep, velvety blackish-brown, with a frosting of whitish guard hairs. The head is often brownish or whitish.

The sea otter ranged from Japan across the entire North Pacific to Baja California. It was hunted down by hardbitten men of the frontier until, by the early 1900's, none could be found except in the most rugged and wild parts of the Kurile, Commander and Aleutian Islands, the Alaskan Peninsula, west coast of Vancouver Island, the rugged Monterey Peninsula and the Santa Barbara Islands of Southern California.

Dr. Gilmore is one of the country's leading authorities on the present status of sea mammals. He is currently responsible for the investigation of Pacific Coast whales which is now being carried on by the U.S. Fish and Wildlife Service.

Rigid protection was given the species by the United States Government over its territories and possessions in 1912, and soon a few more otters began to be seen in the Aleutian Islands and the Alaskan Peninsula. But until 1938, the status of the species was in doubt in southern California. With the opening of the highway from Monterey to San Luis Obispo, California, 94 sea otters were seen in one herd at Bixby Creek, and the scientific world became enthusiastic that the sea otter would again re-populate its southern home. This hope has already been partially fulfilled and it is now estimated that about 500 inhabit the coast from Monterey to San Miguel Island. In Alaska, the population may number 5,000. Conservation in the form of protection has paid off; someday many sea otter will be seen along the rocky, wave-washed coast of California, Oregon Washington, and under rigidly controlled conditions the animal will again be taken for its luxurious fur.

The sea otter is four to five feet long and weighs 75 to 85 pounds. It has a tail 12 to 18 inches long which trails along conspicuously as the animal swims, making a telltale furrow and wake in the smooth water amidst the kelp. The float bulbs of the huge kelp so closely resemble its head that nature has no doubt made the animal aware of this natural protection. But the otter is often betrayed in the vast fields of kelp by its wake as it swims, and also by the harrying action of sea gulls intent on getting a morsel of food from the table set on its chest. For the sea otter brings its food up from the bottom—abalone, sea urchin, or some other item—and rolling over on its back, proceeds to eat in leisure, discarding the shell by a slight toss. Animals are reported to use a rock in breaking the shells. The spectator gasps in wonder as he watches this sleek animal use a tool like a man.

The kelp bed is the sea otter's home and castle, and rarely does it leave to go to sea or ashore. Protection from enemies and calmness of water, with the great supply of food in the forest of stems and leaves and on the rocks which the holdfasts attach, are the main advantages of the kelp bed. In stormy weather, or under other stresses, it may take to the shore; and in the far north it hauls out on beaches like a fur seal, or moves into rank herbaceous vegetation like a land animal.

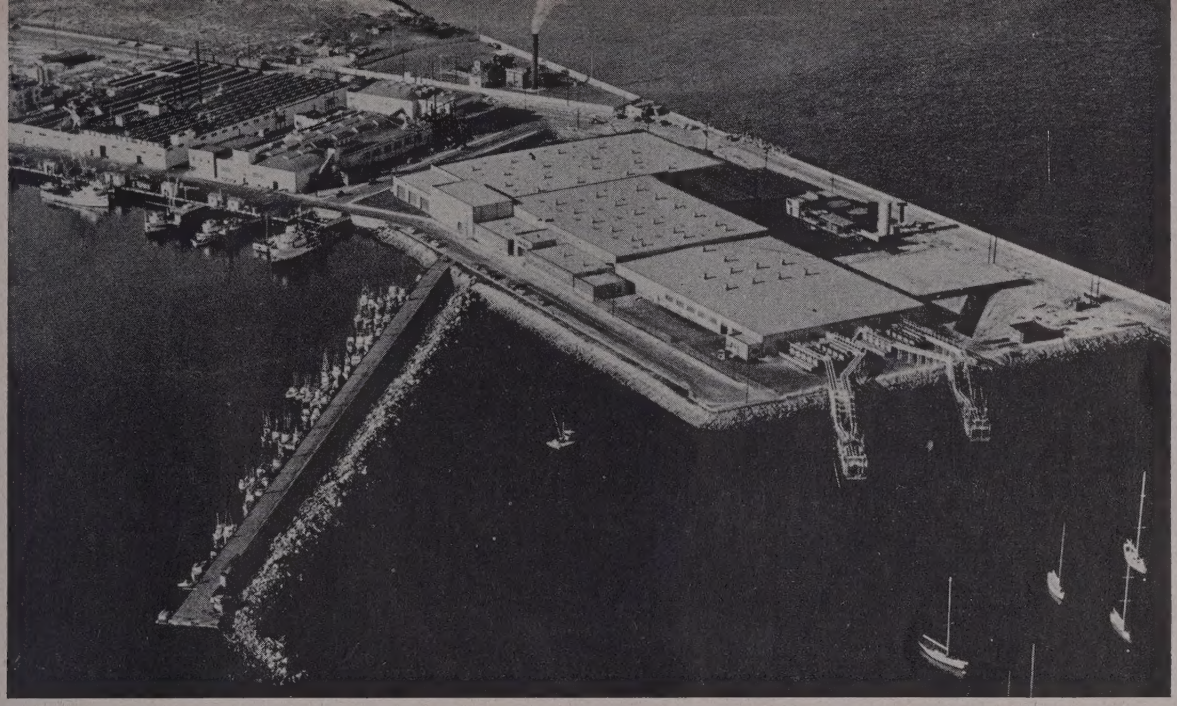
Swimming is done mainly by the webbed hind feet, with occasional sinuous propulsions of the body in a vertical plane. The front feet are used mainly for grasping food, a rock, the offspring and for preening the fur.

You may not hear the mewing cry of the baby otter as it frets for the return of its mother from the depths, but you are likely to see the almost human solicitude and affection shown as she fondles and caresses her offspring, rubs noses with it as if kissing, and takes it on her broad chest perhaps to sleep or at least travel de luxe as she swims on her back. A single young is the rule, but twins are known. Nursing is long, perhaps nearly a year, and the young stays with the family even after the next season's baby is born. The breeding and pupping season extend over most of the year.

Play, and perhaps curiosity, best characterize the sea otters' behavior. The old and young gambol and cavort in the water, doing cartwheels while chasing their own tails, or porpoising in pursuit of each other, or in sheer exuberance of pure animal spirits. When danger intrudes, they may raise their bodies out of the water, hold this position, and then dive quickly out of sight.

The otter can wash its face like a cat, scratch itself like a dog, and rear up like a merman. There is no end to the interest which this intelligent and mysterious animal holds for the human spectator. Small wonder that the sea otter will be one of our most prized natural resources to be enjoyed by the vast number of devotees of nature. With our continued interest and support, this animal need never disappear from our coasts.

For further information on the sea otter and other animals, send 15c to the National Wildlife Federation, 232 Carroll St., Washington 12, D. C., for a 32-page booklet "Our Endangered Wildlife." *



LOS ANGELES HARBOR

YOU can look at Los Angeles Harbor a thousand ways. Through the pages of history and the probing vision of discoverers who sailed their galleons to the golden land. Through chapters of fiction and drama woven through the wharves of the waterfront. Through lenses that turn f3.5 eyes on portraits of progress.

You can give it the cold, calculating statistical stare. (Investment: $150,-000,000. Gross annual revenue: $5,500,000. Area of port: 7020 acres.) You can look for local color. ("Hey, Mac, where's Shanghai Red's?") You can give it the casual glance. ("Why, I never realized there was so much activity down here.") There are a thousand ways.

One way is to get aboard the Angel's Gate, the pin-neat, 90-foot Harbor Department ocean-going tug, and let Skipper Pinky Stiles drive you around the slips and channels. You use the word "drive" because Pinky handles the big boat like a sports car. He doesn't speak of mooring it. He parks it.

You nose through the big shipping and the small boats and churn past miles of docks and wharves, through Inner Harbor and into Outer Harbor, and let the whole great salt-sprayed seascape of the port applique your imagination with the rugged romance of the waterfront. Vignettes of mud flats turned by the will of men into one of the world's busiest ports of call.

Past Fishermen's Wharf, with rows of boats huddled quietly at rest, their decks crowded with dories and the cork floats of the nets. Proud names on their sterns—American Boy, Western Pride, Corsair, Sea Maid and a wishful Miss Universe. Empty crow's-nests high on their masts only buckets of blue sky between trips. Swarthy men on the wharf laboriously repairing nets that sometimes cost $20,000.

Seagull boats sweeping the harbor waters free of refuse. Watchorn Basin and its varnished forest of yacht masts and the playful names of the pleasure boats—Whirlaway, Sea Bell, Stardust, Typee and Gypsy. Trim, gleaming white Coast Guard cutters poised like aquatic whippets at their stations. The big boom on the bow of the buoy tender, the shaking forefinger of a scolding hand. Great, sprawling warehouses on the rock-ribbed mainland. And the rocks ribbed with flowers that face the sea.

Out past the pilot station on the point, and over the starboard bow the great initial span of the nine-mile breakwater bending off Cabrillo Beach to the lighthouse at Angel Gate. And lying off beyond in section after section of granite protection.

The dancing sea buoy bobbing its directional warning seven miles abeam. Tiny, untended, lighted "goofy boats," bait skiffs anchored in an orderly line, riding the gray swells like discouraged pelicans. Dynamite anchorage where vessels with explosive cargoes ride respectfully away from other shipping. Freighters and tankers flying a rainbow of foreign colors resting calmly on the ample, placid bosom of the still water.

Back through Cerritos Channel and West Basin, past a Britisher, a Hollander. A Korean freighter loaded with streetcars for Seoul, the trolleys a curious sight on her deck. And a long, low, interesting Liberian ore carrier, her ensign strikingly like ours. Past the graveyard of ships and the scrap metal skeletons of yesterday's hulls. Through waters daylight-brown with phosphorescence. Past the big canneries ("Albacore Received Here") and the orange and black stacks of the tug fleet and the brilliant white luxury of the Lurline awaiting the serpentine festivities of departure for the islands.

You can see it a thousand ways and you can tell of it a thousand ways. But when you cruise it on the bridge of the Angel's Gate you get some idea of its monumental importance. And you get a touch of that faraway nostalgia that hangs around the harbor. ★

NOT DIFFICULT

How to Sell More Fish

A one-pound increase in the amount of fisheries products consumed by Americans during the next year was set as a goal for the fisheries industry by Aldo Casaretto of Los Angeles in a statement given as he accepted the presidency of the National Fisheries Institute in Chicago last month.

"The time has come for us to take the initiative in setting a definite objective for ourselves," said Mr. Casaretto, "and I suggest that for 1957-58 we make this goal an increase of one pound per capita in the sale and consumption of fish products of all kinds. To attain this objective will require selling—hard selling—by all elements of the industry, but I believe it can be done."

Pointing to results of the Fish Parade (National Fish Week) promotion last fall, Mr. Casaretto said that local market groups which undertook to join aggressively in the promotion, including his own (Los Angeles) realized a definite increase in sales. He urged even greater cooperation and effort in the 1958 Fish Parade, set for Sept. 18-28.

"A marked change has taken place in the fisheries industry," the president declared, "and this change is evident in our National Fisheries Institute convention here in Chicago. The main subjects of discussion, on the convention floor and in the hallways, has been selling—merchandising, promotion, packaging, advertising."

"From the product displays it is evident that our packers have largely redesigned their packages to fit in with the newer needs and demands of the housewife. Frozen and pre-cooked products are in larger volume than ever before. All of which leads me to feel that the fisheries industry has come of age as a modern, aggressive, sales-minded industry."

Regarding consumers, Casaretto said he believes the American housewife is beginning to realize the almost ideal characteristics of fish products as a human food-non-fattening, yet high in nutritional elements essential to health.

Casaretto, who has been in the business since 1934 and operates his own importing-brokerage firm dealing exclusively in fisheries products, previously was a regional director of the NFI and was national secretary at the time of his election as president.

"Romanticizing" and a "new look" for the fish industry were urged as further sales aids at another session of the convention by E. W. Williams, a trade paper publisher.

Introduction of fish sticks, seafood dinners, and prepared frozen seafoods has furnished a start," Williams said, "but there is a nutrition story that has never really been told Mrs. Housewife—of vitamins, nutrition, and the right non-fattening calories in fish."

Noting that almost 40% of the frozen seafood business occurs in the quarter that includes Lent, the speaker added that this "seasonal" characteristic must be changed, in part by becoming more package-conscious, by extending brand-name uses, by marketing additional pre-cooked and prepared seafood products, by increased promotion, and by "more realistic mark-ups" where prices now seem "out of line."

Sea Getting Warmer

During the last two or three decades an increase in the temperature of the surface waters of the Atlantic Ocean has been demonstrated. At the sources of the Gulf Stream this rise is less than one degree Centigrade, but further north two-degree increases have been recorded. This rise is not confined to the surface waters entirely, but may extend down to depths of over 100 fathoms, reports The Marine Laboratory, University of Miami, Coral Gables, Fla.

The warmer temperatures in recent years have decreased the area covered by floating ice in the Arctic, and the thickness of this ice is now reduced some 40 percent. This is important to navigation in opening up new areas and increasing the period of time that vessels may operate in the northern waters.

Owing to this rise in water temperatures the fisheries of the north have also benefited. Extensive banks, formerly too cold, have been made habitable for several species of fishes. Notable among these is cod, which has extended itself in the waters of Iceland and Greenland, and the catch of cod from these waters has increased during this period of higher temperature. Much of this increased production reaches our own tables in the form of frozen sticks made from frozen fillet blocks and as frozen fillets.

World Trade Week

More than 200 Southland civic, professional and service groups have joined with the Los Angeles Chamber of Commerce and the Los Angeles and Long Beach Harbor Departments to sponsor the 31st annual World Trade Week celebration, with nearly a month-long series of events planned to promote this year's observance which has as its theme, "You live better through world trade."

The annual celebration, initiated in 1927 by the Los Angeles Chamber, and since 1935 a famed national event, is set this year for the week of May 19-26 by proclamation of President Eisenhower, highlighted by National Maritime Day, May 22.

WASHINGTON SALMON

A total of 4½ million marked salmon will be released in Washington State streams and estuarial areas during the coming year, states C. H. Ellis, supervisor of hatchery research for the Department of Fisheries.

Marking at 12 of the department's 19 stations will involve chinook, silver, chum and pink salmon.

In 1956 the hatchery research division marked and released 4 million salmon fingerlings and yearlings, the first time such an amount had been reached in yearly marking experiments by any single fisheries agency.

The young fish will be marked by the clipping of fins in various combinations. Fin mark requests have been submitted to the Pacific Marine Fisheries Commission for final assignment.

Most of the salmon, except for chums and pinks, will be reared to migratory size. Chinook fingerlings will be hatchery reared for 90 to 120 days after they first begin to feed; silvers for a year. The chums will be marked as unfed fry, while the pinks will be fed only a short time before marking.

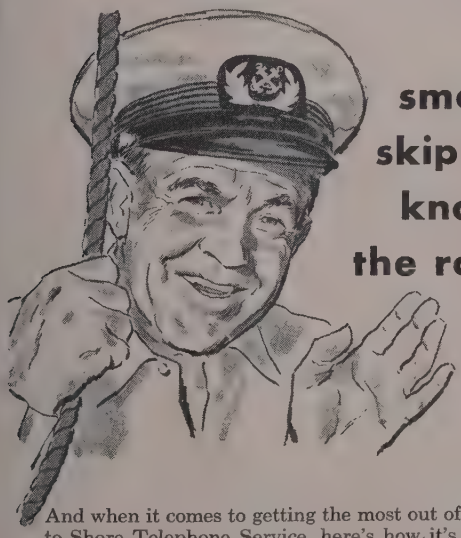
All of the pink salmon, being hatched at the Hoodsport hatchery, will be fed on brine shrimp nauplii in a continuation of experiments on the creation of an even-year run of pinks in Puget Sound.

Experiments will include planting of nearly 1½ million fall chinook in the Deschutes River to continue releases that have contributed heavily to both sports and commercial fisheries in Puget Sound. Also included is the third year phase of planting marked fall chinook in the Columbia River which includes the barging downstream of 250,000 fish. This experiment continues the evaluation of effects of predation and hydroelectric development on survival rates of a complete cycle of Columbia River fall chinook.

In the past few years the fisheries agency has concentrated on the rearing and release of chinook salmon, with returns in both numbers of fish and catch in pounds justifying the emphasis. In 1956 the department planted more than 30 million hatchery reared salmon—23 million chinook, more than 7 million silvers and 700,000 pinks, chums and sockeyes.

The increased output has been made possible since 1950 with the construction of five new hatcheries, the reactivation of a sixth and the expansion of rearing capacity at three others.

Plans for future years envision even greater releases, with the new Washougal hatchery, now under construction and slated for completion in 1957, alone adding space for the annual rearing of about 5 million salmon.



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California Tuna Receipts and Pack Set Record

Tuna cannery receipts of 204,800 tons and the canned pack of 9.5 million standard cases set new production records in California during 1956. The previous high pack of 9.3 million cases was reached in 1954. During the past 10 years the California tuna pack has increased steadily from 4.5 million cases in 1946, to the record pack of 9.5 million cases in 1956, or more than doubled in 10 years.

Shrimp in Panama

The total catch of red shrimp in Panama during the 1957 season may reach 3 million pounds, according to a U.S. Embassy dispatch from Panama City. This would compare with 600,000 pounds taken in the 1956 season. The red shrimp were still being caught at the end of March on an average of 15,000 to 20,000 pounds a day. The water temperature, however, is gradually rising and the red shrimp were expected to return to deep water soon.

New Nautical Chart

A new nautical chart covering the Farallon Islands, California, has been published, designed to meet the requirements of the fishing industry and small-boat owners operating in the area.

The chart offers large-scale coverage of the three groups of rocky islets approximately seven miles long, located in the Gulf of Farallones, 26 miles west of the Golden Gate. The Islands were formerly covered only by small-scale general charts.

The Farallon Islands are a part of San Francisco City and County. On Southeast Farallon, which is the largest and only inhabited island (pop. 30 in 1952), are a lighthouse and a long-range radiobeacon and radar station. The islands serve as a bird refuge and also have seal herds.

As the Islands are located in the approach to San Francisco Bay they are used in clear weather to establish offshore positions. Even when the lower land near the beach is shut in by fog or haze the high points on the islands serve as a navigational aid. In thick weather the currents, which are variable in direction and velocity, render the approaches difficult and dangerous.

Copies of the chart (No. 5598) are distributed by the sales agents, district offices, and the Washington office of the Coast and Geodetic Survey. Price 75 cents per copy.

Northwest Exploratory Cruise

Continuation of midwater trawling experiments will be the objective of an 8-week cruise by the Fish and Wildlife Service's exploratory fishing vessel *John N. Cobb* which began on April 29, 1957. The experimental fishing is being done with a 64-foot nylon midwater trawl on the offshore trawling grounds from Oregon to British Columbia. It is planned to work closely with some of the commercial trawlers who have reported seeing schools of fish, presumably Pacific Ocean perch, on their echo sounders in midwater depths on many occasions when their bottom gear was relatively ineffective.

A pair of new aluminum midwater trawl doors will be tried out on this cruise. Equipment is also being assembled for experiments to determine depth of the trawl by electrical telemetering. Special trawl cable having electrical conductors in the center will be tested as a possible substitute for the present system of acoustic depth telemetering in use on the *John N. Cobb*.

The cruise is planned to be "split," with a port call at Seattle scheduled in the middle for anticipated modifications to the midwater trawling gear and other experimental equipment.

Mexican Fishery Loans

During 1957 about 9 million pesos (US$720,000) will be made available through the National Cooperative Development Bank of Mexico for loans to fishery cooperatives. In addition, the fishery cooperatives will be permitted to borrow for the first time from private banks. The loans will be for the purpose of boats and gear, according to a U.S. Embassy dispatch from Mexico City.

U.S. Fur-Seal Auction

A decrease in prices of United States fur-seal skins marked the semi-annual auction of Government-owned furs at St. Louis on April 12, Assistant Secretary of the Interior Ross L. Leffler announced.

A total of 27,819 skins, products of the sealing industry administered by the Department of the Interior's Fish and Wildlife Service on the Pribilof Islands, brought $2,547,182. This compares with 26,890 skins sold for $2,714,852 at the October 1956 sale. The grand average for all skins sold for the account of the United States Government was $91.56; at the October sale it was $100.96. The grand average at the April 1956 sale was $93.27. The sale was well attended by United States, Canadian, and European buyers.

Hunting and Fishing License Holders

Once again a record has been set in the number of license holders for sport fishing and wild game hunting in the United States, reports Secretary of the Interior Fred A Seaton. California replaces Minnesota as top ranking State in fishing licenses but Michigan, the only State to record more than a million hunting license sales, retained its lead in hunting.

Fish and Wildlife Service compilations show, Secretary Seaton said, that during the fiscal year ending June 30, 1956, there were 33,163,831 hunting and fishing license holders in this country, and increase of 117,470 over the previous record set in the fiscal year ending June 30, 1955.

An increase of 270,296 hunting license holders is responsible for the new record. Fishing licenses decreased by 152,826. In spite of the drop in fishing and again in hunting licenses, fishing is still the more popular sport. A total of 18,701,983 licenses were sold for angling compared with 14,461,848 for hunting. Conversely, the hunters paid the greater amount for their licenses, tags, permits and stamps—$46,638,220 compared with $42,149,674 for fishing licenses, permits and stamps.

TIDES OF THE INDUSTRY

Japanese Exports Up

While the quantity of Japanese exports of fish and fish products rose 26.6% from 1955 to 1956, the value of those exports rose 59.5%. Total fish and fish products exports in 1956 amounted to 196,363 metric tons (valued at US$120.6 million) as compared with 155,108 metric tons (valued at US$75.6 million) in 1955, as reported by the United States Embassy in Tokyo.

Canned Fishery Products Increase

The pack of canned fishery products in the United States, Alaska, American Samoa, Hawaii, and Puerto Rico in 1956 amounted to 975.1 million pounds valued at $347.6 million to the packers, according to a report by the U.S. Fish and Wildlife Service. This was an increase of 15% in volume and 14% in value compared with the previous year.

The 1956 pack of tuna and tuna-like fishes totaled 11.8 million standard cases and established a new record in volume. Sixty-eight per cent of the pack was produced from domestically-caught fish. Increases also occurred in the packs of salmon, Pacific and jack mackerel, fish for animal food, Maine sardines, oyster stew, Dungeness and king crabs, whole and minced clams, and clam chowder. Decreases were recorded in the packs of Pacific sardines, natural oysters, and shrimp.

Schoettler to Viet-Nam

Robert J. Schoettler, Seattle, chairman of the International Pacific Salmon Fisheries Commission and former Washington state fisheries director, has received an assignment from the U.S. State Department for overseas service in Viet-Nam.

His appointment by the International Cooperation Administration, a division of the State Department, is fisheries advisor to the U.S. Operations Mission at Saigon. It became effective immediately following the May 8-9 meeting of the International Sockeye Commission at Vancouver, B. C.

Schoettler served as director of fisheries for Washington from 1950 until early this year. His membership on the Sockeye Commission also began in 1950. He has been a member of the advisory committee of the International North Pacific Fisheries Commission since 1953.

New Fish Hatchery

A fish hatchery to cost approximately $1,350,000 will be included in the Trinity River division of the Central Valley Project in California, to assure conservation of existing fish runs, the U.S. Interior Department has announced.

One of the principal features of the Trinity River work, Lewiston Dam, now under construction, will block migration of fish at the dam site. King and silver salmon and steelhead trout pass upstream beyond the dam site in their spawning runs.

Construction of the hatchery was recommended by the Fish and Wildlife Service and the California Department of Fish and Game. The authorizing legislation for the Trinity River project directs the Secretary of the Interior to adopt appropriate measures to assure the preservation and propogation of fish and wildlife resources.

Discoloration in Tuna Cans

Certain batches of tuna, when canned, cause an iron sulfide deposit to form on the can area adjacent to the headspace. The deposit is caused by a reaction between sulfide from the fish and iron in the can.

In a study jointly sponsored by the Continental Can Company and the U.S. Fish and Wildlife Service, investigations were made on the effects of retorting and cooking on the formation of black ferrous sulfide discoloration in canned tuna. Free sulfide was not found in the unprocessed fish but appeared in all canned tuna after processing.

The amount of free sulfide was found to increase with longer retorting periods. Free sulfide did not form a black precipitate of ferrous sulfide unless the free iron in the ferrous state was available. Discoloration occurred in the cans during the cooling period and was greater in cans held at elevated temperatures while being cooled. Thus, one of the important considerations in the prevention of iron sulfide discoloration of tuna cans is a quick cooling period.

Carloading Clinic

The importance of good carloading and safe car handling in the overall merchandising of California canned foods was stressed at a carloading clinic sponsored jointly by the California Fish Canners Association, Association of American Railroads and the Terminal Railroads of Southern California. The clinic—first series of its kind—was held last month at Terminal Island, Calif.

Carrying the theme "Delivering the Perfect Can to the Consumer," the program pointed up the role and responsibility of carrier, shipper and receiver in the over-all effort to deliver damage-free merchandise.

In addition to a review of recommended carloading patterns and practices, the program highlighted a film, "Million Dollar Dream," produced by the Southern Pacific Company. The film illustrates the bad effects of rough handling and the efforts being made to reduce this cause of damage, also some new developments in carloading.

Carrier representatives conducting the clinic included: E. J. Kraska, Canned Goods Specialist, American Association of Railroads, Chicago, Illinois; Leo Turner, Transportation Inspector, Santa Fe Railway; H. L. Comstock, and F. G. Reed, Southern Pacific; Roy Denson, Union Pacific; John Heller, Engineer, AAR. Charles R. Carry, California Fish Canners Association, acted as Chairman of this Clinic.

California Takes Fishing License Lead

California beat Minnesota to take the lead in the number of fishing licenses issued last year, although the total number of licenses issued nationally has dropped, the Fish and Wildlife Service announced.

California's 1,319,190 licenses represent an increase of 33,210 over 1955.

Trends In Fish Food Harvest

Although the food fish catch last year was 100 million pounds more than in 1955, it was still about 12 percent below the 1947-1950 average, the Fish and Wildlife Service of the Department of the Interior reported.

Food fish taken in 1956 totaled 2.8 billion pounds. This is 400 million pounds below the average of 1947-1950.

Since 1950 the population of the United States increased about 20,000,000. Had the 1947-1950 rate of food fish production been maintained in 1956, the catch would have totaled 3,650,000,000 or 30 percent more than the actual production, the fish and Wildlife Service estimated.

Despite the decline in the catch of food fish during recent years the per capita consumption of fish has remained fairly constant at 10 to 11 pounds edible weight. Large increases in imports made this possible.

During the years 1947-1950 imports of edible fish and shellfish averaged 860 million pounds, round weight basis. In 1956 these imports totaled about 1,500,000,000 pounds. Imports supplied about 35 percent of the domestic supply of edible fishery products in 1956 compared with an average of 21 percent during the years from 1947 to 1950.

Items received in considerably grtaer volume in 1956 were frozen groundfish fillets, canned salmon and fresh and frozen shrimp. Receipts of fresh and frozen tuna were below the record 145,246,000 pounds received in 1955. The big catch of menhaden in the Atlantic ocean and in the Gulf of Mexico was a principal factor in the 1956 record harvest.

Other species taken in considerably greater volume in 1956 than in the previous year were tuna, 330,000,000 pounds (271,000,000 pounds in 1955); Pacific and jack mackerel 123,600,000 pounds (59,000,000 pounds in 1955); Alaska herring 103,000,000 pounds (64,000,000 in 1955); and Maine herring 133,000,000 pounds (99,000,000 pounds in 1955). The catch of salmon amounted to 311,000,000 pounds, up 21,000,000 pounds from the low 1955 catch. The catch of haddock likewise increased, amounting to 150,000,000 pounds compared with 135,000,000 pounds in 1955.

Catches of a number of important species were down sharply in 1956. The catch of Pacific sardines amounted to only 66,500,000 pounds compared with 146,000,000 pounds the previous year. Preliminary data indicated that the catch of shrimp amounted to only about 220,000,000 pounds compared with 236,000,000 pounds the previous year. The catch of ocean perch totaled 151,000,000 pounds, down 6,000,000 pounds compared with 1955.

Threadfin Shad, Useful Forage Fish

The threadfin shad, a small prolific forage fish of Tennessee and other southeastern states, has moved west—and fishing in Lake Mead, Havasu and Mojave and at other places along the Colorado River is getting better, according to reports reaching the Fish and Wildlife Service of the Department of the Interior.

As a result, prospects are bright for the three states bordering these waters—Nevada, Arizona and California—to develop a sport fishery of national popularity.

Fishery biologists of the three states are not yet definitely linking the improved fishing results with the establishment of the threadfin, but they report that anglers in Lake Havasu who fish in the proximity of shad schools catch the most bass. Other facts which are either coincidental with the establishment of threadfin in the Colorado River waters or directly attributable to it include: The average growth of bass has increased over two inches a year; there is a greater survival of bass spawn; bass are biting better and biting earlier in the season; crappie fishing in Lakes Mead and Havasu is improving and the individual fish are bigger. There are also indications that when threadfin shad are available for trout, the trout are using it as forage.

* * *

A 462 pound sturgeon taken from the Sacramento River at Fremont Weir, reports the National Automobile Club, contained an estimated 1,700,000 eggs. The ovaries weighed more than 84 pounds.

Fish Cannery and By-Products Production in 1956

Increases in the packs of tuna, Alaska salmon, Maine sardines and Pacific Coast mackerel are largely responsible for the 10% increase in the 1956 production of fish canned for human food, in the United States and Alaska. In 1956 there were 650,000,000 pounds of fishery products packed for human use as compared with 588,000,000 pounds in 1955.

The tuna pack of 227 million pounds set a new record, beating the 1955 pack by 31 million pounds. The Alaskan salmon pack was 144 million pounds, 30 million pounds higher than in 1955, but the Puget Sound salmon fisheries produced 20 million pounds less than in the year previous. The Puget Sound pack was 23 million pounds.

A larger run of red salmon in western and central Alaska and a better-than-usual run of chum salmon in central and southeastern Alaska were responsible for the gains made in the Alaska fisheries. The Puget Sound area experienced its usual "even-year absence" of pink salmon which, because of their two-year cycle, historically have large runs on odd-numbered years and almost no fish on even ones.

Pacific Coast firms engaged in canning Pacific and jack mackerel produced 50 million pounds in 1956, twice the 1955 mark. This heavy pack was due to a great extent to the extremely low sardine catch and the canners turned to mackerel as an alternative. The Pacific sardine pack of 32 million pounds was just half what it was in 1955. The Maine sardine canners had a much better year in 1956, canning 45 million pounds, an increase of 19 million over 1955.

South Atlantic and Gulf oyster canning of 4.3 million pounds was down considerably below the 1955 mark of 5.3 million pounds. Shrimp canners, with 13.8 million pounds in 1956 were slightly ahead of the previous year.

Bass in Hawaii

Smallmouth bass, one of the fine mainland game fish, finally has been established in Hawaii, after several unsuccessful attempts since 1953. This may be one answer to Hawaii's inland fishing problem, according to Assistant Secretary of the Interior Ross L. Leffler.

Because of its distance from other land areas, Hawaii has fishery problems peculiar to itself, Fish and Wildlife Service officials say. There is only one native game fish, the goby, in the inland waters of the islands. Also many of the important game and food fishes which abound in the shallow waters and around the reefs of other Pacific areas are missing from the inshore waters of Hawaii.

Fishery scientists say that the Hawaiian fish fauna is part of the Indo-Pacific fauna which had its origin in the East Indies. Apparently the fish migrated westward into the Indian Ocean and eastward across a great part of the Pacific. The Hawaiian Islands, lying on the fringe of the migration area, did not receive many of the fish common to localities throughout the western and central Pacific. It is presumed that the vast expanse of ocean separating the Hawaiian chain from the rest of the Pacific islands presented too great a barrier for many of those fishes which prefer to spend all or most of their lives in shallow water close to a shore.

Two Fish Canneries for Korea

Standard Steel Corporation of Los Angeles has been awarded a contract from the United National Korean Reconstruction Agency to build two fish canneries, a fish meal and oil reduction plant and associated equipment.

These two custom-designed canneries will be assembled in Korea under the supervision of Edward David, technical consultant for Standard Steel and former cannery executive of Monterey, California. Mr. David spent several years in Korea with the United States Army boosting fish production after the Korean War. The equipment will be shipped by Standard Steel in early summer.

"More food for hungry Koreans is the basic reason for construction of these canneries," Mr. Burns said. The diet of the average Korean is very low in protein as very few pigs, chickens or cattle are kept in the country. When the Japanese moved out during the Korean War they took most of the production equipment and manufacturing tools with them. About 50 people will be employed at each cannery and each unit is rated at 1,650 pounds of canned product per hour, although higher production is expected. One plant will be located on the Isle of Norado off the southern shores; the other in Pohang on the east coast. The fish meal and oil reduction plant will also be at Pohang.

Fish to be processed include mackerel, squid, small tuna, smelt and anchovies. Approximately 20% of the total mackerel goes to the reduction plant and 12 to 15 gallons of oil per ton of mackerel is extracted. Possible uses for the oil include food preparation, manufacture of soap, etc. The fish meal will probably be fed to chickens and livestock; it also may be used for fertilizer.

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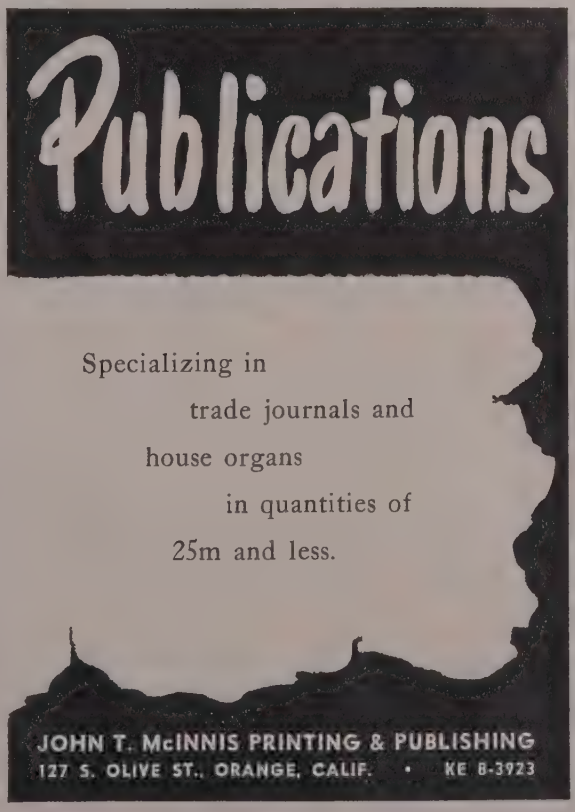

Research Vessels Study

Albacore Habits

Although the albacore—source of choice white-meat tuna—probably does not realize it, it is actually fenced in by an "isotherm," a "thermocline," and a food boundary.

So report the two Fish and Wildlife Service research vessels — the *Manning* and the *Gilbert* — which have completed surveys in the broad Pacific, verifying data which had previously been assembled.

It seems that water colder than 57 degrees has no appeal to the albacore. In hundreds of miles of experimental fishing, temperature-taking and water sampling, the crews of these vessels could find no albacore on the cold side of the "isotherm" — the meandering, unstable line along which the termepature is 57 degrees.

Likewise, the researchers verified information that the albacore stays above the "thermocline," an imaginary sheet which separates the warm waters of the surface from the very cold waters below. The thermocline is sometimes only a few feet down and sometimes 200 feet or more below the surface.

The third limit to the distribution of albacore—the "food boundary"—is the barren water where few of the microscopic animals which are the basis for fish food exist. This boundary can sometimes be recognized by the color of the water and sometimes only by scrutinizing samples of the water with a microscope.

All of this may seem relatively unimportant to the landsman but to the men in the boats—the men who help feed America by bringing in the fish—such findings are important. Showing these fishermen where *not* to look can make the difference between well-utilized hours and a lot of wasted time—for much of the albacore fisherman's time is spent in seeking fish.

Nor is the albacore the only fish limited by such things as isotherms, thermoclines, and food supplies. Each species of fish, like every other animal, has its habitat—conditions under which it can live and conditions under which it can't. There are some 200 kinds of fishes in the ocean which are currently being used for food. As the ocean is a restless mass, these various boundaries with their high sounding names continually change.

Correctly reading the pattern of the distribution of fishes in the wide waters of the oceans leads to more efficient and economical fishing operations, hence the value of research.

Gray Whale Herd Moving North

The gray whale is now heading north to its summer feeding grounds in the Bering Sea in a migration that will get little public observation, according to the Fish and Wildlife Service of the Department of the Interior.

This whale, a scenic attraction on its journey south close to shore during the winter months, makes its northward migration virtually unnoticed—the thousands of migrants being spread over too wide an area in the Pacific and usually too far from shore to attract attention. On its way southward it travels in a relatively narrow corridor seldom more than three miles from shore.

During the recent winter Fish and Wildlife observers at the La Jolla, California, station counted 1,782 of these animals migrating to their wintering grounds. In one period the whales were about five miles apart. Traveling at five miles an hour, that means a whale an hour passed the observers.

Their wintering ground is along the coast of Lower California, and some of the whales even round the tip of the long peninsula and feed not far from the main coast of Mexico.

Once plentiful, the gray whale was harvested to the point of near extinction. Now it is protected by international agreement. Presently it is estimated there are about 4,000 adult gray whales and 500 calves, although conditions make an accurate census difficult.

Government Aid for

Convalescing Veterans

A program called "fishery management assistance to Veterans Administration hospitals" may be just "part of the job" for the biologist of the U. S. Fish and Wildlife Service but it is a light in the dark for many veterans, young and old, who are attempting to recover from the rigors of war.

For "fishery management assistance" made it possible for the Veterans Administration hospital at Downey, Ill., to develop a half-acre pond into a fishing spot which afforded the patients 3,000 fishing visits during a single season. In another case, assistance was rendered when the Temple, Tex., veterans facility was developing a 12-acre lake which will mean fishing recreation to hundreds of veterans who are convalescing. At the Northampton, Mass., veterans installation, it means a chance for patients to take catchable-size trout which the Fish and Wildlife Service plants there annually.

Hospital officials have repeatedly declared that they regard fishing as "extremely beneficial to patients" and in many instances Veterans Administration officials have asked for technical help in stream and pond development. In the period 1951-1955, the Fish and Wildlife Service responded to requests for help at 45 of these installations. In most instances, some improvement of opportunities for recreational fishing was possible.

The amount and kind of technical aid given depends upon conditions. The Fish and Wildlife Service supplies no funds for necessary development. Financing and getting the work done is the responsibility of the Veterans facility and is often accomplished with the help of interested local groups. But the Service does provide, in addition to technical guidance for fishery development, such hatchery fish as may be required for the management programs.

Shrimp in Mexico

According to a U.S. Embassy dispatch, Mexican shrimp production is following the pattern set several months ago. The west coast catch is less than that for 1956 and the east coast catch is greater.

The National Cooperative Confederation is in the process of negotiating shrimp fishing contracts with the boat owners for the west coast of Mexico. The present contract expires on March 15. Agreement has not been reached. The cooperatives are asking for an increase of 1,345.00 pesos per metric ton of headless shrimp. This represents an increase of about US$0.04885 per pound, headless weight.

At Salina Cruz, Oaxaca (the only area now open for fishing on the west coast, owing to the closed season in effect for Lower California, Sonora, Sinaloa and Nayarit which began March 15 and probably will continue through May 15) the boat owners agreed to an increase of 1,125.00 pesos per ton plus an additional 30 pesos per ton when the catch per trip was two tons or more. In addition the boat owners agreed to pay for the loading and unloading of the boats. In total this is an increase of about 4.2 U.S. cents per pound, headless weight, when the trip yields less than two metric tons and about 4.3 cents per pound when the catch is two tons or more. The boats out of Salina Cruz are currently averaging less than two tons per trip.

Skipjack Tuna Abundant in Marquesas Islands

Abundant schools of aku (skipjack or striped tuna) and adequate supplies of live-bait were reported by personnel of the Honolulu-based Fish and Wildlife Service research vessel *Charles H. Gilbert* on their return from a 70-day exploratory fishing cruise in the Marquesas Islands area. According to Dr. A. L. Tester, director of the Pacific Oceanic Fishery Investigations, this area some 2,000 miles southeast of Hawaii is of interest as a potential new winter tuna fishing ground both for Hawaii-based boats and for the West Coast tuna fleet.

Two successive surveys through the archipelago showed skipjack schools to be numerous everywhere. During the first survey 80 tuna schools were sighted, but most of them were wild and fast-moving and did not respond well to chumming with live bait. On the secondary survey 89 schools were sighted, the fish showed more interest in the bait and good catches were made.

A new type of plastic dart tag was usedto mark 797 skipjack and 10 yellowfin tuna, which were released alive in the hope that subsequent recaptures may shed some light on the migrations of these fish, at present almost completely unknown. The barbed head of the new tag is simply stabbed into the tissues of the fish, obviating the time-consuming knotting that was necessary with earlier types of plastic tags. Since tuna, and particularly skipjack, die very quickly out of the water, thes peed and ly out of the water, the speed and make it a very promising new tool for tuna research.

Quantities of Marquesan sardines adequate for use as live bait were discovered in 10 bays among the islands, and observations were made on the ability of these fish to withstand confinement in the vessel's bait tanks and on their behavior when used to chum up tuna schools.

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A BIGGER AND BETTER FISHERY MARKET

MOST fishery interests agree that things are looking up for the future. Some of our most troublesome problems are being recognized and helpful solutions searched out—by both business and government authorities. You can read about them on other pages in this magazine.

With the American economy in general on a high level, and most lines of business apparently destined to remain that way, we believe that the fisheries situation also will shape up quite satisfactorily in the days ahead.

Our efforts now and always are dedicated to the creation of bigger and better markets for canned tuna, and to advance the best interests of the entire tuna industry.

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